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Revised  
September 1982

# BIRTCHER

## Operating & Service Manual

### 732 & 732A

### HYFRECATOR®

ALSO:

701 HYFRECATOR

702 HYFRECATOR

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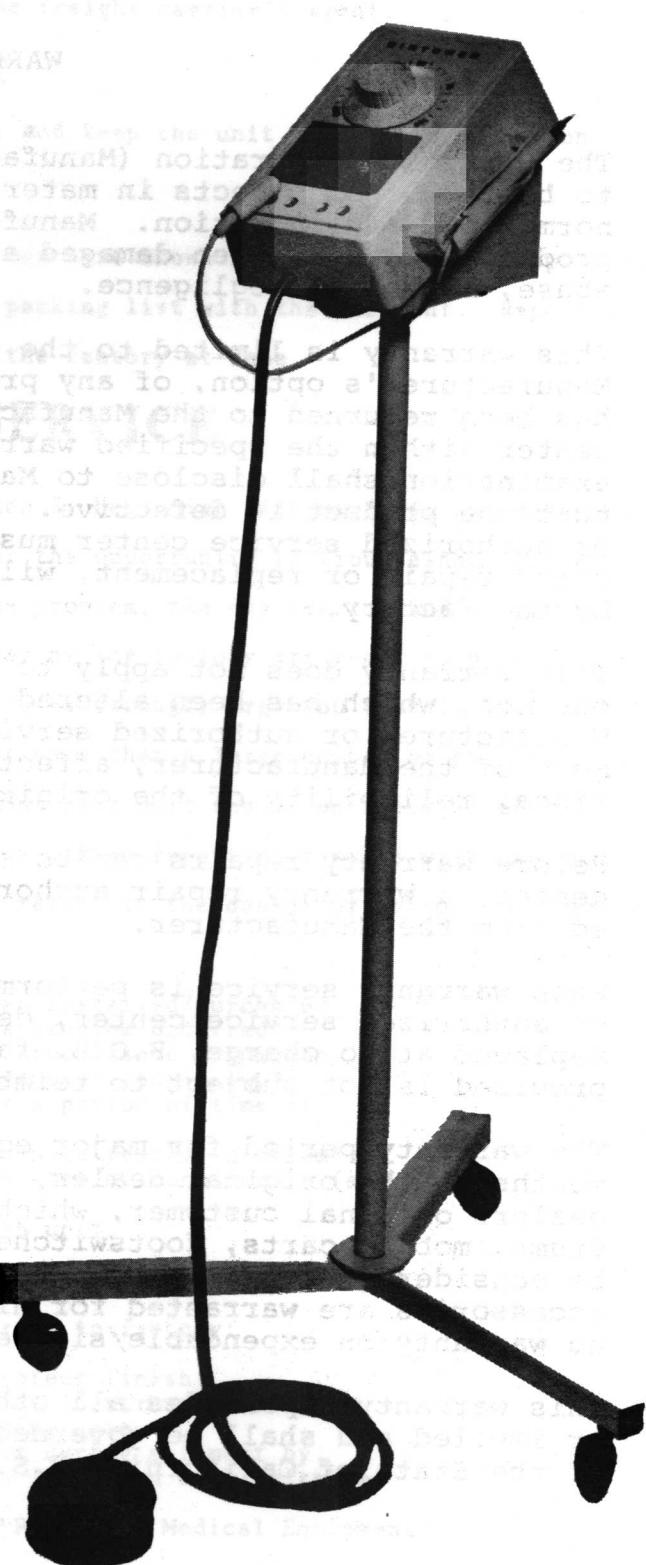
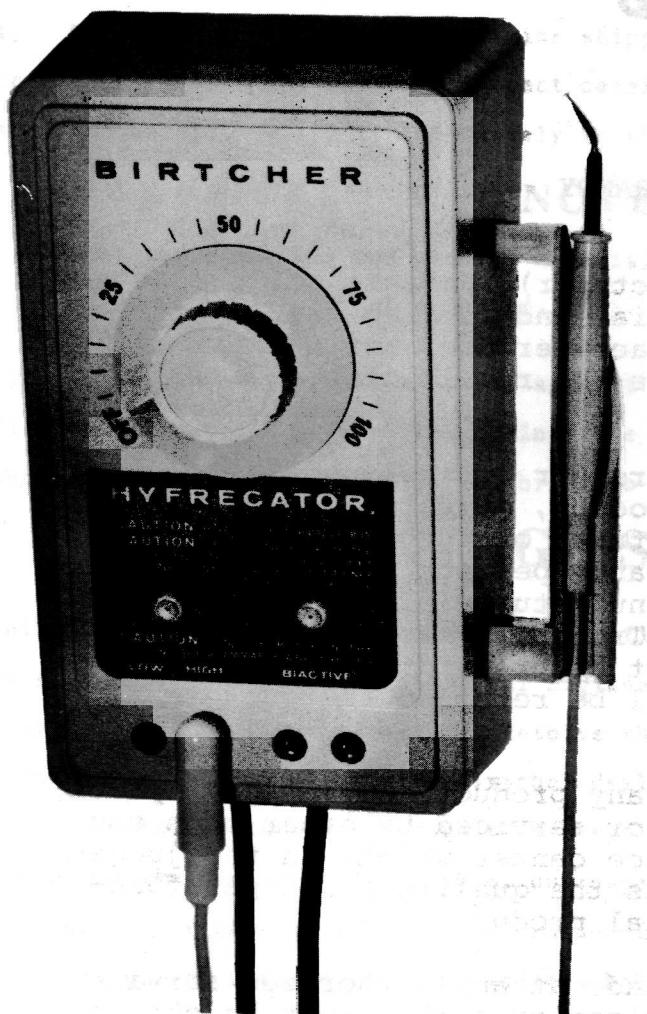
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# PHOTO SHIPPING BOX

Use shipping container for external damage. Inspect carefully for visual damage. If no damage, place in original packing material.

## SHIPPING

Place the unit in a padded box or shipping case and keep the unit upright. Use a soft padding (foam) to prevent vibration. Place the unit in the center of the box. Add padding around the unit to prevent it from moving. Use a padded box or shipping case to protect the unit.

When shipping the unit, make sure it is packed firmly and securely. Use a padded box or shipping case to protect the unit. Make sure the unit is not exposed to extreme temperatures or direct sunlight. Use a padded box or shipping case to protect the unit.

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per  
box

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## **WARNING STATEMENT**

Hyfrecator® handles and electrodes must be cleaned thoroughly after each use. If you see any signs of electrical discharge or damage to the handle or electrode, do not use it. If you experience any unusual sensations during treatment, stop immediately.

## **CONTRAINDICATIONS**

**Users are warned against the use of the Hyfrecator® on patients with implants of various natures such as heartpacers, metal pins, metal joints, etc. Check with attending physician for patients medical history before using Hyfrecator®.**

## **WARNING**

**Remove all metal objects from treatment area before using Hyfrecator® on patient. It is not advisable to use in proximity of digital watches, portable radios, pocket calculators, hearing aids, etc.**



## GENERAL DESCRIPTION

### 1.1      INTRODUCTION

This handbook presents a comprehensively written and illustrated operating & service aid to the technician.

### 1.2      PURPOSE OF EQUIPMENT

The Hyfrecator® provides the surgeon with a very high frequency damped electrosurgical current for use in Desiccation, Fulguration and Coagulation.

### 1.3      CONTROLS

The Hyfrecator® unit has one control and two indicating lamps. The knob on the front of the Hyfrecator® controls the ON/OFF switches (S1 & S3) in the extreme counter clockwise position and the intensity of the outlet current to all terminal outlets. One lamp will light when knob is rotated clockwise past OFF position and the other lamp will light when footswitch is depressed.

### 1.4      ACCESSORIES

The Hyfrecator® set includes the following standard accessories.

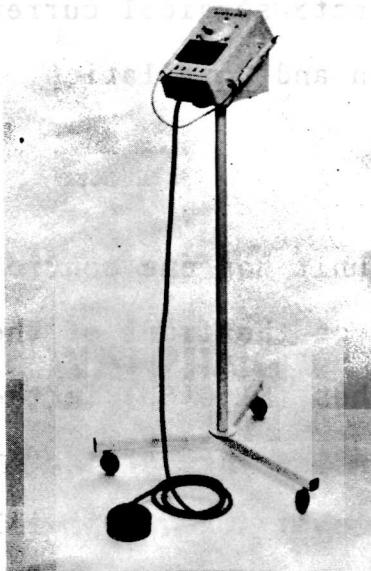
- 1    711-A      Handle and Cord
- 1    711-B      Needle
- 1    716        4" Straight Tissue Desiccation Needle
- 1    22647-1    Mounting Plate with Screws

## 1.5

OPTIONAL ACCESSORIES

## SECTION I

Since its introduction in 1937, the Hyfrecator® has been used by hundreds of thousands of physicians all over the world, and through their clinical experiences, hundreds of techniques have been developed. To meet the demands of the most widely used of these techniques, Birtcher has developed accessories as shown on the following pages.



708-1 MOBILE STAND

The 708-1 Mobile Stand provides for mounting the Hyfrecator® at a height and angle convenient for use with the operator standing or sitting. Has storage space for cord, footswitch and accessories. Rolls easily on special casters. Finished to match the Hyfrecator® and designed to enhance any office.

## 1.6

SPECIFICATIONS

DIMENSIONS	9 1/4 X 5 1/4 x 4 in. 23 X 14 X 10cm		
WEIGHT	4.5 lbs., 2.0 kg		
FINISH	ANTIQUE WHITE, BLUE TRIM		
LEAKAGE	WITH THIRD WIRE (GREEN) OPEN 50 MICROAMPERES MAXIMUM		
POWER INPUT REQUIREMENTS	732 - 85 WATTS MAXIMUM 110/120 VOLTS, 60 Hz AC  732A - 85 WATTS MAXIMUM 110/150/220/250 VOLTS, 50/60 AC		
OUTPUT POWER	LOAD 125                                    500  Bi-polar Max.                         26 WATTS                        18 WATTS High Max.                              11 WATTS                        20 WATTS Low Max.                              13 WATTS                        18 WATTS		
OPERATING FREQUENCY	750 KHz NOMINAL		

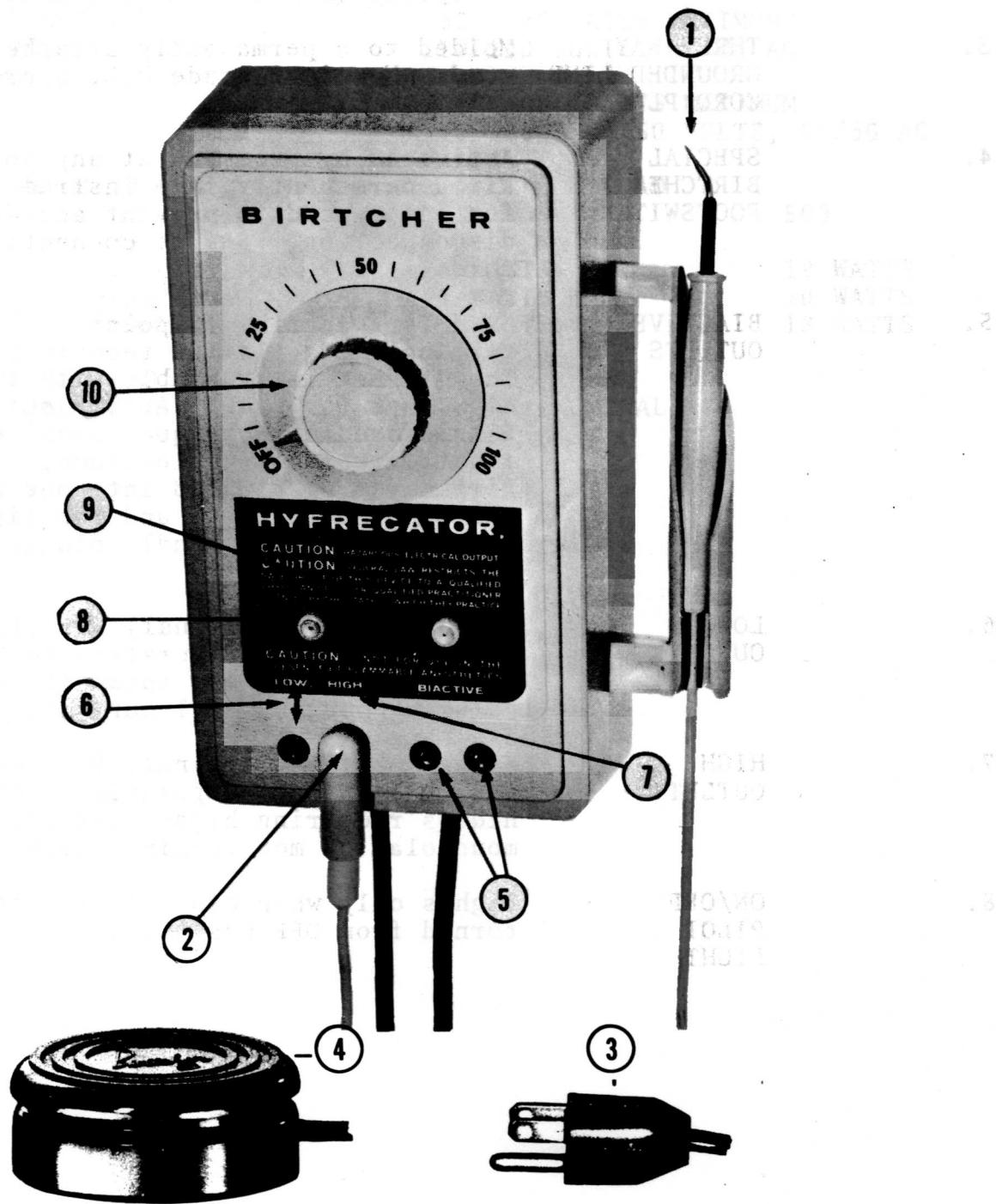
SECTION 2

OPERATING CONTROLS AND INDICATORS

FIGURE	NAME	DESCRIPTION
1.	HANDLE AND ELECTRODE	711-A Handle and 711-B Needle Electrode shown are standard with 732.
2.	CORD TIP	Plugs into LOW or HIGH outlet for monopolar (monoterminal) techniques.
3.	THREE-WAY GROUNDED LINE CORD PLUG	Molded to a permanently attached cord. Hospital grade U.L. approved.
4.	SPECIAL BIRTCHER FOOTSWITCH	Activated by pressing at any point. Wired permanently into instrument for safety and to prevent accidental disconnection. 8-foot connecting cord.
5.	BIACTIVE OUTLETS	Used for biactive (bipolar or bi-terminal) coagulation techniques. The 789 set is available with two tips, one for each BIACTIVE outlet. Single needle techniques requires (indifferent plate electrode, Birtcher 706) plugged into one of the biactive outlets and the tip for the electrode handle plugged into the other.
6.	LOW OUTLET	(Single active terminal) For light desiccation and fulguration techniques requiring low intensity monopolar or monoterminal current.
7.	HIGH OUTLET	(Single active terminal) For heavier desiccation and fulguration techniques requiring higher intensity monopolar or monoterminal techniques.
8.	ON/OFF PILOT LIGHT	Lights only when control dial is turned from OFF position.

## OPERATING CONTROLS AND INDICATORS (Con't)

FIGURE	NAME	DESCRIPTION
9.	ACTIVE CIRCUIT PILOT LIGHT	Lights only when footswitch is depressed activating spark gaps.
10.	CONTROL DIAL	For current intensity selection.



## SECTION 3

### HYFRECATOR®

#### MONOTERMINAL (HIGH OR LOW)

#### APPLICATION - REGARDING SHOCK

Monoterminal meaning one lead for application from the instrument to the patient.

In all electrical devices where current comes out of an instrument, this current must have a path to return. The return path for monoterminal applications, is through the body, (capacity of garments, shoes, and etc. on the patient) to ground and back to the instrument. If any portion of the patient's body comes in contact with ground, current will take the least resistive path and a burn occurs or the patient will indicate that he received a shock. Should the doctor touch the patient or break contact during the time current is flowing through him, a shock will be felt by the doctor. Should the doctor depress the footswitch before the electrode is in contact with patient, the patient will experience a shock.

How to prevent shock during monoterminal applications:

1. Never have patient lie or sit on a grounded table or metal chair.
2. Do not let patient come in contact with any metal objects which are grounded.
3. Position the electrode on the patient before depressing the footswitch.
4. If doctor must touch patient, grasp patient firmly with one hand BEFORE depressing footswitch or BEFORE current is flowing. DO NOT break contact during procedure.

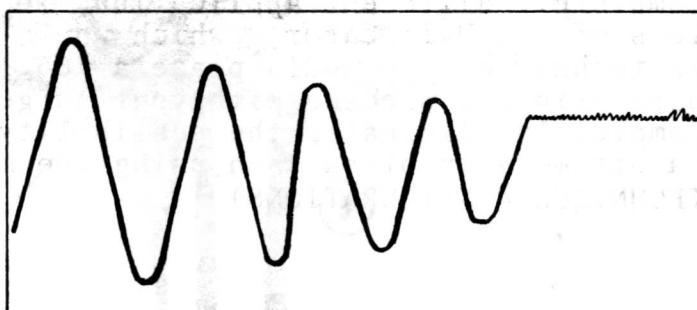
If you wish a completely different application, you may use the two right-hand outlets of the Hyfrecator, which would be the bi-terminal method. In this technique, you would place a 706 Indifferent Plate on the patient's bare skin and proceed with your surgery in your normal manner. This completely eliminates the possibility of anyone receiving a shock but is a bit more involved than using the monoterminal method. (See page 13, TECHNIQUE CONFIGURATIONS)

CURRENTS FOR ALL TECHNIQUES OF  
ELECTRODESICCATION, FULGURATION  
AND BIACTIVE COAGULATION

THE HYFRECATOR® - A TIME PROVEN INSTRUMENT. The Hyfrecator® is a simple, compact device that generates a high frequency damped current of relatively high voltage and relatively low amperage, by means of spark gaps. As early as 1900 medical researchers reported utilization of this current form, and by 1911 the techniques had been introduced into clinical practice. It wasn't until 1937, however, when the Hyfrecator® was first introduced, that a low cost, compact, convenient modality became available to popularize the techniques by permitting their use in every office and treatment room.

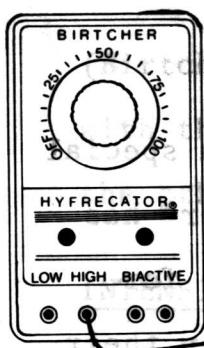
Not to be confused with electrosurgical current forms that are designed for cutting (electrosection), the damped spark gap currents generated by the Hyfrecator® are for electrodesiccation, fulguration and coagulation *without cutting*. For electrosection and for the heavy electro-coagulation commonly required in the hospital operating room, Birtcher major electrosurgical units are recommended.

Literally hundreds of techniques have been developed, using the Hyfrecator®. This booklet describes the most generally reported of these in condensed form and is designed not as a text but to indicate in general the work that has been, and is being, done clinically with this modality. As with all other methods in the practice of medicine or surgery, results in electrodesiccation depends both on the skill and training of the operator and various physiological factors involved. The conditions referred to in the following pages are included because a reasonable number of authorities have reported favorable results using the current form produced by the Hyfrecator®. A bibliography of texts and papers on the subject is included in the back of this booklet for more detailed study of techniques and results.



Damped spark gap current generated by the Hyfrecator® as displayed on an oscilloscope.

## TECHNIQUE CONFIGURATIONS

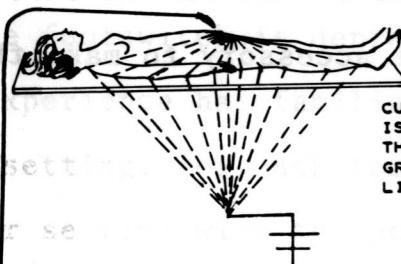
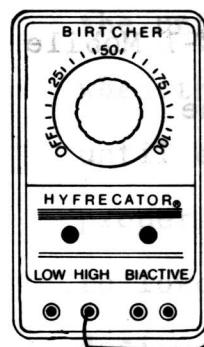


740, 741 & 744 CAN BE USED IN THIS CONFIGURATION.

FOR MONOPOLAR FULGURATION AND DESICCATION PROCEDURES, USE EITHER HIGH OR LOW TERMINAL ONLY (DO NOT USE THESE TERMINALS SIMULTANEOUSLY).

**WARNING**

DO NOT PLUG INDIFFERENT PLATE INTO UNIT WHILE USING HIGH OR LOW TERMINALS FOR MONOPOLAR FULGURATION OR DESICCATION PROCEDURES.

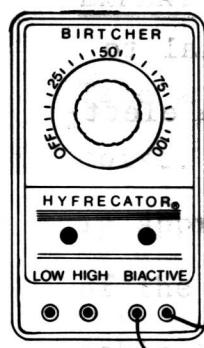


740, 741 & 744 CAN BE USED IN THIS CONFIGURATION.

CURRENT RETURN IS ACHIEVED BY THE THIRD WIRE GROUND IN THE LINE CORD.

**WARNING**

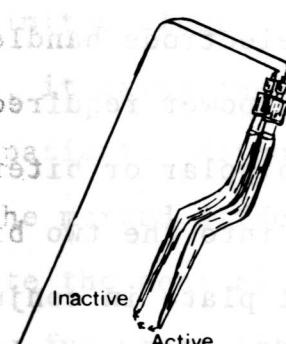
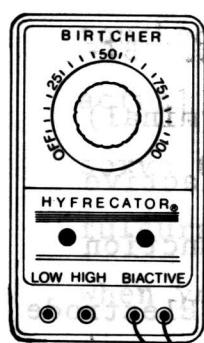
DO NOT USE LOW OR HIGH TERMINALS IN CONJUNCTION WITH A BI-ACTIVE TERMINAL.



711A, 711E, 740, 741, 744 & 779-1X CAN BE USED IN THIS CONFIGURATION IF CONNECTED IN PLACE OF FORCEPS.

**WARNING**

DO NOT USE LOW OR HIGH TERMINALS IN CONJUNCTION WITH A BI-ACTIVE TERMINAL.



782 & 789 SETS CAN BE USED IN THIS CONFIGURATION IN PLACE OF THE FORCEPS.

BI-POLAR ELECTRODES ACTUALLY DETERMINE PATH OF THERAPEUTIC CURRENT OF THE AREA TO BE COAGULATED. BI-POLAR COAGULATION DOES NOT ALLOW CURRENT TO FLOW THROUGH SURROUNDING ORGANS OR TISSUE.

## OPERATING INSTRUCTIONS

### MOUNTING

For wall mounting, each Hyfrecator® is provided with a special mounting plate that screws to the wall. The Hyfrecator® has two lugs on the back that slip into slots in the plate for secure mounting and easy removal. Many physicians keep their Hyfrecator® in a drawer or mount it under the top of a treatment table for greatest convenience. The Birtcher 708-1 Mobile Stand is available as an optional accessory to make the Hyfrecator® a mobile unit.

### OPERATION

Plug line cord into AC wall power outlet; select HIGH or LOW outlet terminal (BIACTIVE TERMINALS for biactive techniques) and plug in active electrode cord tip; turn Control Dial to desired setting and depress footswitch to activate the electrode.

### OUTLETS

For desiccation and fulguration with monopolar or monoterminal current, plug the cord tip of the electrode handle into either LOW or HIGH outlet, depending on power required. BIACTIVE outlets are used for biactive (bipolar or biterminal) techniques only with both tips plugged into the two biactive outlets. When employing an indifferent plate in conjunction with a single active electrode, the Indifferent Plate Electrode

## OUTLETS (Con't)

(Birtcher #706) is plugged into one of the BIACTIVE outlets with the tip for the single electrode handle plugged into the other.

## INTENSITY SELECTION

Turning the Control Dial clockwise (from 0 to 100) turns on the unit and increases the power available at all outlets when the footswitch is depressed. It is recommended that, until experience has familiarized the operator with the proper setting, for each technique, the initial selection be to lower setting with the power gradually increased to the desired level.

## EXPERIMENT

Take a 1/4 lb. piece of lean beef or horsemeat fresh and moist. Allow it to warm up to room temperature, to more nearly approach body temperature. Cold meat retards the effect of the current. Hold meat firmly in the hand or lay it on table and touch it with hand. The small piece of meat alone has a limited electrical "capacity" but when firmly held or touched, it gains the capacity of your body simulating an actual patient. Without changing Control Dial settings, observe the marked difference in intensity of the spark when you fulgurate the meat alone, as compared with the spark produced when you fulgurate the meat firmly held in your hand.

## FULGURATION

(CONT'D) STERLING

Using the LOW and HIGH outlets in turn, bring the needle point near to, but not touching, the meat (one to three mm). Use various Control Dial settings and observe the different degrees of fulguration which you may produce. Short bursts of spark, with a short period between for cooling, are more acceptable to the patient. Continuous application of the spark tends to create heat, which may become intolerable. Cut meat open at fulgurated spots and observe that the effect is relatively shallow.

## DESICCATION

Use thin needle. Insert into meat not deeper than 2 or 3 mm and turn on current for one to five seconds. Use different intensities with LOW and HIGH outlets. Cut meat open with a scalpel and observe depth of action. A mild blanching of the tissue is all that is required in most conditions for which electrodesiccation is advocated by most authorities. If heavier coagulation is desirable, then biactive or biterminal coagulation should be used.

## COAGULATION

When heavy coagulation or even complete destruction of tissue is required, special biactive electrodes are used or a biterminal technique with an indifferent electrode and one active electrode is employed.

## ANESTHESIA

The amount and type of anesthetic required for any procedure, as in other types of surgery, will depend on the site of the operation and the tolerance of the patient. Small lesions are frequently removed without anesthesia when not in sensitive areas. Explosive or flammable anesthetics should not be used because of the open spark. Similarly, when the site is cleaned with alcohol or other flammable cleansing agent prior to the operation, the surface should be thoroughly dried before proceeding.

## HYFRECACTION TECHNIQUES

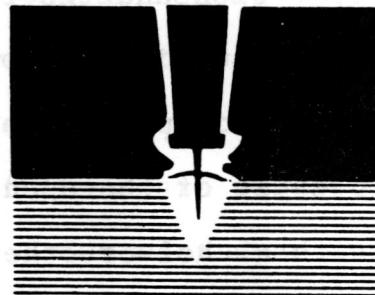
The terminology used to describe the application of high frequency currents has created some confusion. A high frequency, high-voltage current discharging from one outlet or terminal to the patient is variously described as monoterminal, monopolar, or as an oudin current. A high frequency current traveling back and forth between two terminals of the instrument, or between two electrodes, is variously described as biterminal, biactive, or bipolar.

Monoterminal application of the high frequency current may have an effect upon tissue varying from very light and superficial dehydration to relatively deep penetration and destruction. Biterminal application may create an effect in tissue varying from very heavy coagulation. Either application carried to extreme intensity or long duration will cause carbonization or charring.

## HYFRECATOR TECHNIQUES (Con't)

### ELECTRODESICCATION

**Definition and mode - Desiccation**  
(from the Latin *desiccare* - to dry)  
A monoterminal technique in which the electrode is held in surface contact or inserted into the tissue. Electrodesiccation is a dehydration process that creates a mild heat in the tissue immediately adjacent to the needle point. Cellular fluids are evaporated, blanching the area treated. However, continued electrodesiccation at increased intensity will result in tissue destruction and charring.



**APPLICATION** - The area depth that may be desiccated with one application is dependent on several variables; first, the current intensity; second, the length of time current flows; third, the density and moisture content of the tissue; and fourth, the surface area of the electrode. It is well to keep in mind that when making application with the needle inserted, the current intensity and the time allowed must both be increased in direct proportion to the increase in the diameter of the needle and the depth of insertion. In other words, a needle of larger diameter inserted to a depth of 1/8 inch requires roughly twice the current and twice the time to produce the same effect as would be produced by a needle of half the diameter inserted to but half the depth. Obviously, a very fine needle is desirable when it is desired to penetrate the lesion to a considerable depth.

**HEALING** - Healing of a small lesion is usually complete in from one to three weeks after electrodesiccation, by granulation from the base, followed by epithelialization. A crust forms and sloughs in seven to ten days. Large lesions may produce two or three successive crusts.

#### **Note**

**IN AN AREA OF GOOD BLOOD SUPPLY AND ABUNDANT SUBCUTANEOUS TISSUE, HEALING WILL BE RAPID.**

**POST OPERATIVE CARE** - Small lesions may require no dressing following desiccation. Larger areas of destruction will require antiseptic dressing and medication at the physician's discretion until the wound is epithelialized. As in any

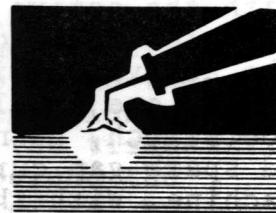
## HYFRECATOR TECHNIQUES (Con't)

### POST OPERATIVE CARE (Con't)

surgical procedure, large open wounds should be carefully protected against secondary infection. Every effort should be made to prevent premature removal of the crust.

### FULGURATION

Definition and mode - Fulguration (from the Latin *fulgar* - lightning) - a mono-terminal technique in which the electrode is held slightly out of contact (one to three MM), with the surface being treated causing a sparking (electrical arc) to the surface. The point of the active needle electrode must be precisely positioned close to the area being treated. Otherwise, the electrical arc may be diverted to adjacent tissue areas or metallic instruments when the footswitch is depressed. Tissue destruction is limited to a shallow area under the spark and is normally characterized by an eschar.



APPLICATION - The area and depth that can be destroyed with one application is dependent on: current intensity, length of time current flows, density and moisture content of the tissue and the distance by which the electrode is separated from the tissue.

HEALING - Same as electrodesiccation.

POST OPERATIVE CARE - Same as electrodesiccation.

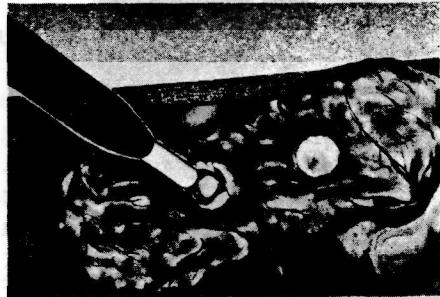
### COAGULATION AROUND BALL POINT

When an electric current flows through any substance which offers resistance to its passage, heat is generated. The amount of heat generated is the current that flows and the time factor. In electrocoagulation the current flows between the active electrode and the indifferent electrode.

COAGULATION AROUND BALL ELECTRODE (Con't)

No heat is generated at the indifferent electrode because of the large area of its surface. Since the same volume of current concentrates around the very small surface area of the active needle or ball, the resistance of the immediately adjacent tissue is sufficient to create adequate heat to cook the tissue.

With the active and indifferent electrodes connected to the active and indifferent terminals one merely steps on the footswitch, gaining the damped spark gap current from the machine. With this true damped current a needle point, loop, ball point or blade will coagulate the tissue without any tendency to cut whatsoever. In surgery, an area to be coagulated may be contacted with the active electrode and the current turned on - or the needle point may be actually inserted beyond the end of the needle point. Experience alone must be the guiding factor as to the depth of coagulation, but it must be kept in mind that a longer time factor will bring about greater and deeper coagulation than a greater amount of power for a very short period.

COAGULATION WITH BI-ACTIVE ELECTRODES

Definition and mode - BI-ACTIVE COAGULATION (from the Latin *coagulare* - to clot) A biterminal (sometimes called bipolar) technique wherein two electrodes are employed with the current flowing between them. Bi-active techniques usually employ a two needle electrode with the current flowing between the needles to destroy the tissue between and immediately adjacent. A modification of the bi-active technique employs a single needle or ball electrode at the point to be treated and an indifferent plate electrode in contact with a large skin area to complete the circuit. Currents generated for coagulation are relatively lower in voltage and higher in amperage than those used in electrocesication. The objective is to create in the tissue mass a temperature

## HYFRECATOR TECHNIQUES (Con't)

### COAGULATION WITH BI-ACTIVE ELECTRODES (Con't)

sufficiently high to cause coagulation of the protein of the cells, thus ending their life as active cells. They are then sloughed off or absorbed by the body.

APPLICATION - In recent years there have been developed what are properly known as Bi-Active Needle Electrodes, Forceps, etc. In this type of electrode there are two needles and cords. The area and depth of tissue destruction are dependent on; first, current intensity; second, length of time current flows; third, density and moisture content at the tissue; and fourth, type of electrode used. No indifferent electrode is used, but the cord tips of the two cords are attached to the opposite sides of the circuit of the machine - both cords to the Bi-Active terminals. By this method the current flows between the two needle points and coagulates the tissue between them, slightly around them and just beyond the end of the needle points. It is claimed, therefore, by this method that the depth of coagulation is under greater control (see Figure B, below). Special types of electrodes have been designed along these lines for electrocoagulation of tonsils, turbinates, cervix, surface growths and for the Thorek Gall Bladder Coagulation technique.



HEALING & POST OPERATIVE CARE - Same as electrodesiccation.

## APPLICATIONS IN DERMATOLOGY

Because it is fast, convenient and produces superior cosmetic results in most conditions, the Hyfrecator finds its greatest usefulness in the destruction of skin lesions. Anesthesia may or may not be required, depending on the site of the operation and patient tolerance. Many electrodesiccation and fulguration procedures are relatively painless. In addition, these techniques have inherent aseptic qualities.

### MALIGNANCIES

Great differences exist in opinions concerning the use of electrosurgery in the destruction of malignant lesions. When malignancy is suspected, a biopsy should be taken before the procedure for histopathologic examination. Many authorities have reported good results with a combination of curettage followed by electrodesiccation while others have utilized electrodesiccation or coagulation alone. Almost all authorities agree that too timid an approach, doing too little in order to produce better cosmetic results in the treatment of a malignant or potentially malignant neoplasm is unpardonable.

### ADENOMA SEBACEUM

Each papule may be treated by desiccation using a low current setting and inserting a fine needle point into each gland.

### ANGIOKERATOMA

Superficial desiccation is recommended, blanching the surface with the electric spark with the needle point held one to two millimeters away from the tissue.

### ANGIOMA

CAVERNOUS. Electrodesiccation may be used satisfactorily for small lesions, using a fine needle. Make several insertions of the needle, a few millimeters apart.

### ANGIOMA

SENILE. Superficial desiccation is recommended, launching the surface with the electric spark with the needle point held one or two millimeters away from the tissue.

### CLAVUS

CORNS. A fine needle inserted within the anesthetized corn activated with a high frequency current will desiccate this painful growth. One application is usually sufficient. If the corn is sizeable, it may be removed with forceps after desiccation. Avoid strain on the foot and pressure against the desiccated area during the healing process.

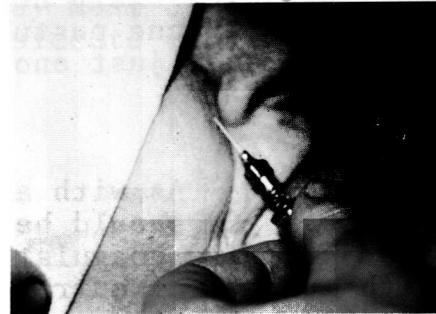
## APPLICATIONS IN DERMATOLOGY (Con't)

### BIACTIVE COAGULATION OF A MALIGNANT GROWTH

1. The extensive destruction of coagulation is called upon in attempting to eradicate this Dermoid Carcinoma. (See picture #1, below)
2. The area around the malignancy is first anesthetized. (See picture #2, below)
3. The biactive needles are then deeply inserted and heavy coagulation is produced. (See picture #3, below)
4. The blanching of the tissue reveals the deep coagulation. Subsequent observations will determine whether the malignancy has been completely destroyed. (See picture #4, below)



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### FIBROMA

Small pedunculated Fibromas can be destroyed by light desiccation.

## APPLICATIONS IN DERMATOLOGY (Con't)

CYSTS. Cysts may be destroyed by electrodesiccation. First surgically open the cyst, drain, and insert the point of a fine needle. Desiccate the wall of the cyst thoroughly. If the wall is not destroyed thoroughly, the cyst may reappear.

### FURUNCULUS

A boil or carbuncle in the early stages may usually be aborted by inserting the point of a fine needle in the central follicle and desiccating lightly for a second or two.

### GRANULOMA PYOGENICUM

Readily responds to desiccation. Treat lightly with a desiccation spark.

### INFECTIONS

Pyrogenic skin infections varying from acne pustules to large carbuncles are effectively treated by electrodesiccation. Insert a small diameter sharp needle electrode one or two millimeters into each acne pustule, depress footswitch for a fraction of a second, just enough to blanch the tissue.

### EPITHELIOMAS

BASAL CELL CARCINOMA. As with all diagnosed or suspected malignancies, a biopsy should be obtained prior to electrodesiccation or biactive coagulation. Thorough removal of the tumor with a surgical curret followed by fulguration or electrodesiccation has been recommended by a number of authorities. A post operative biopsy will determine if all of the local lesion has been destroyed.

BULTIPLE, BENIGN, CYSTIC. Each papule should be destroyed by delicate desiccation using a fine needle point. There may be a slight scar.

CARCINOMA IN SITU, BOWEN'S DISEASE, AND INTRA-EPIDERMAL BASAL CELL CARCINOMA. The same techniques are employed as in basal cell carcinoma. Since these lesions may extend farther than appears, destruction of at least one-half inch into normal appearing epidermal margin has been recommended.

SQUAMOUS CELL CARCINOMA. The same techniques are employed as in basal cell carcinoma, although some authorities prefer to use electrosurgical cutting currents (electrosection) to remove the lesion after biopsy has been obtained.

### KELOID

Thoroughly desiccate the entire growth. Some authorities recommend treatment by X-ray immediately following desiccation.

## APPLICATIONS IN DERMATOLOGY (Con't)

### KELOID (Con't)

Most authorities warn against traumatism in these cases.

### KERATOSES

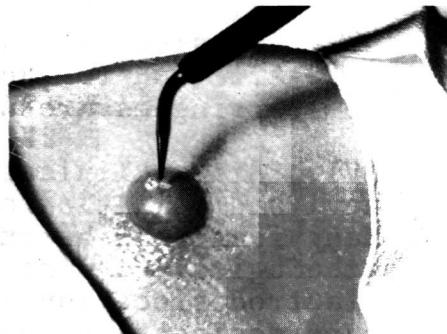
ACROCHORDON (SKIN TAG). This lesion is benign and a good cosmetic result can be achieved by means of light desiccation followed by shaving the growth flush with the surface of the surrounding skin.

SEBORRHEIC KERATOSES. Curettage extending to the firmer, underlying corium, but not into it, followed by fulguration of the site has been widely recommended.

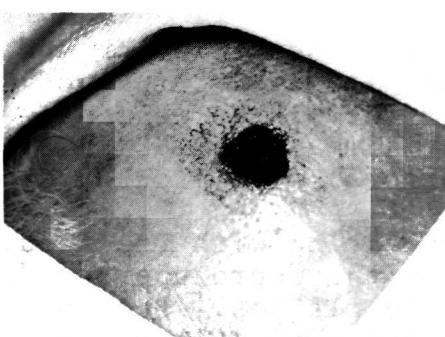
SENILE OR ACTINIC KERATOSES. Often considered as precancerous lesions, they may be quickly removed by desiccation. The technique is exactly the same as with a wart with a pedicle. In these cases, one should be sure that the entire lesion has been completely destroyed in one sitting. In larger growths desiccate thoroughly, then cut away most of the dehydrated mass with scalpel or scissors and redesiccate to a greater depth.



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## APPLICATIONS IN DERMATOLOGY (Con't)

### KELOID (Con't)

Most authorities warn against traumatism in these cases.

### KERATOSES

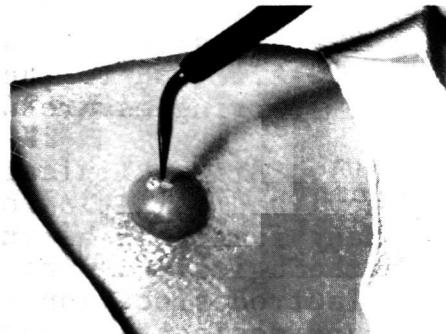
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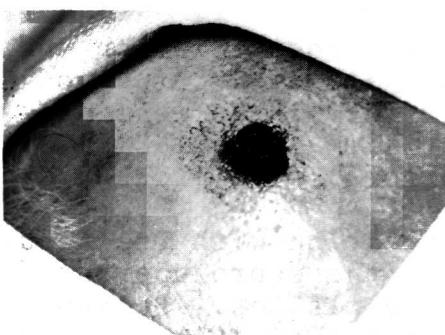
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## APPLICATIONS IN DERMATOLOGY (Con't)

### FULGURATION OF A FIBROLIPOMA

1. A Fibrolipoma is an excellent example of the type of growth in which fulguration is effectively utilized. (See picture #1, previous page)
2. The needle is held over the growth and the spark jumps across to it. (See picture #2, previous page)
3. The fatty tissues have been carbonized by the fulguration spark. (See picture #3, previous page)
4. Smooth, lustrous epidermis appears after the sloughing of the scab. (See picture #4, previous page)

### LUPUS VULGARIS

Small nodules can be desiccated in a few seconds by allowing the spark to play on the surface, inserting the needle 1/16" into the growth. Larger patches of Lupus respond to the same method.

### NEVI

EPIDERMAL NEVI. Epidermal Nevi may be readily removed by superficial electrodesiccation although, to prevent recurrence, may recommend destruction to the firm corium, in which case mild to severe scarring may result.

NEVUS CELL NEVI. Size, clinical and morphological type, and location of nevi and condition of patient influence method of treatment. Many feel that because of the possibility of malignancy pathological examination of all treated nevi is mandatory. Electrodesiccation alone, shave excision and desiccation, and desiccation and curettage are frequently mentioned as treatments of choice.

COMPOUND NEVI. Light fulguration, electrodesiccation and desiccation with gentle curettage are all used with good cosmetic result, depending on the extent of the lesions. As with any nevi of malignant potential many authorities advocate a biopsy should be taken prior to the procedure.

INTRADERMAL NEVI. Light electrodesiccation with the needle inserted into the lesion will destroy these protuberant domed verrucous nodules or irregular sessile plaques. Because these lesions are intradermal, some scarring will usually result.

SYRINGOMA. Very light fulguration and gentle curettage have been recommended for cosmetic removal of these lesions.

## APPLICATIONS IN DERMATOLOGY (Con't)

TRICHOEPITHELIOMA AND ADEMOMA SEBACEUM. When few lesions are present electrodesiccation and curettage should be sufficient for cosmetic results. Some authorities suggest dermabrasion in combination with desiccation and curettage when lesions are extensive.

SEBACEOUS NEVI OF JADASSOHN. Electrosurgical removal is a frequently used technique in the destruction of these lesions with the destruction carried at least to the midcroidum.

MELANOMA. The same basic technique is employed as in basal cell carcinoma however, since a melanoma is a more serious problem, most authorities agree that the local lesion must be surgically excised by a wide margin. In addition many recommend extensive dissection of the lymphatic drainage of the involved area, even in the absence of palpable nodes.

### NEVI, ADNEXAL

ACNE. Acne pustules may be treated by inserting a needle electrode approximately one millimeter into each pustule and lightly desiccating, just enough to blanch the tissue. Acne scars may be smoothed by using light fulguration to level off their sides.

HYDROCYSTOMA. Small lesions (less than two millimeters in diameter) can be destroyed by light desiccation. Solitary cysts of recent appearance should be biopsied for possible malignancy before shaving level with the skin and fulgurating the site to minimize oozing.

ROSACEA. A fine needle electrode inserted into each papule activated with a mild desiccating current has been recommended by many authorities for best cosmetic result. Telangiectasia may be destroyed by fulguration.

NEUROFIBROMA. These lesions can be destroyed with electrodesiccation or with a combination of electrodesiccation and careful curettage. Flat or slightly depressed scars are likely sequelae.

SENILE ECTASIA. Fulguration with the needle held one millimeter from the surface or electrodesiccation with the needle touching, or lightly inserted into the tissue, until a light char appears will destroy these small lesions.

SPIDER ANGIOMAS. Electrodesiccation with a fine needle inserted into the central vessel and each of the larger radiating vessels will destroy these lesions. Since telangiectatic lesions fill from both ends, they must be entirely destroyed. Light fulguration with a fine needle over the course of the vessel will destroy very fine vessels.

## APPLICATIONS IN DERMATOLOGY (Con't)

### RHINOPHYMA

A fine needle point inserted slightly into the cutaneous vessel activated with a mild desiccating current will bring about pleasing results. The nodules may be first excised, then the wound thoroughly desiccated.

### NEVI, VASCULAR

CAPILLARY HEMANGIOMA (ANGIOMA SIMPLEX). Small angiomas are readily destroyed, depending on extent, by inserting a fine needle into the central area of the lesion and desiccating with a heavy current or inserting biactive needles into the lesion and coagulating until the margins show blanching.

JUNCTIONAL NEVI. Removal with superior cosmetic result may be achieved with light fulguration, electrode desiccation or desiccation with curettage depending on the extent of the lesion. Biopsy prior to destruction, as with any potentially malignant lesion, is frequently recommended by many authorities.

LYMPHANGIOMAS. Superficial lesions are treated by inserting a fine needle into the tissue as far as it will easily go and desiccating lightly until some char appears in the lesion and on the edges or, by fulgurating with the needle held one millimeter from the surface until the surface blanches. Some authorities advise against overcautious treatment since, with inadequate destruction, small fistulae draining lymph fluid may be produced.

NEVUS FLAMMEUS AND PORT WINE STAIN. Small lesions may be treated with light electrode desiccation although, except for very small lesions, scarring will result. Electrodesiccation should not be employed unless an area of flat scar is preferable to the coloration of the nevus.

### VERRUCA (Wart)

Under this is included all types excepting venereal warts (See section on Urology). On small flat warts, the spark from the needle point may be applied over the entire surface of the growth until it is blanched. After the slough, redesiccate lightly any wart tissue left. A larger wart with a pedicle can be destroyed by using a sharp small diameter needle, inserting the point approximately one millimeter into the base of the pedicle and turning on the current just long enough to blanch the tissue around the needle point. Circle the pedicle with several similar punctures.

### VERRUCA ACUMINATA

Desiccate each small wart superficially; remove the desiccated lesion with a curet, then lightly desiccate the wound.

## APPLICATIONS IN DERMATOLOGY (Con't)

FILIFORM WARTS. Fulgurate with a light current using a fine needle until carbonized.

JUVENILE WARTS. Desiccate with a fine needle and a minimum current.

KERATOCANTHOMA. Destroy with biactive coagulation. Because these lesions are predominately intradermal, scarring will result.

MOLLUSCUM CONTAGIOSUM. Destroy by inserting a fine needle in each nodule and electrode desiccating with a light current.

PLANTAR WARTS. Electrodesiccate thoroughly with a fine needle inserted into the wart. Because of the deep invagination of this type of lesion great care must be taken to delineate it since incomplete destruction may result in recurrence.

### VERRUCAE NECROGENICA

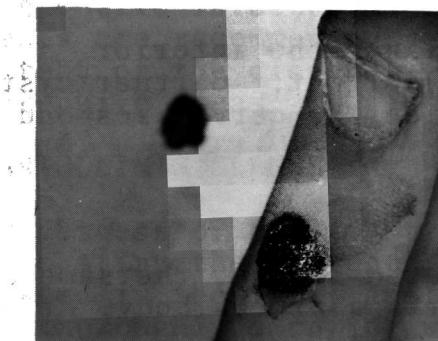
This may be permanently and easily destroyed by electrode desiccation. In larger areas desiccate thoroughly, remove the destroyed tissue, then redesiccate.



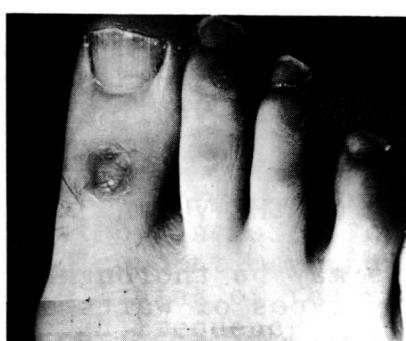
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## APPLICATIONS IN DERMATOLOGY (Con't)

### FULGURATION - DESICCATION OF VERRUCA VULGARIS

1. In treating a Verruca Vulgaris on the big toe prompt healing is important. (See picture #1, previous page)
2. The little blue spark of fulguration is sprayed all over the growth for a few seconds. (See picture #2, previous page)
3. The scab drops off in a few days. (See picture #3, previous page)
4. A clean, healthy surface appears in a minimum of time. (See picture #4, previous page)

### APPLICATIONS IN PLASTIC SURGERY

Many surgeons use the Hyfrecator® for hemostasis in plastic and reconstructive surgery because it saves time and its use produces minimized tissue reaction as compared with conventional methods. Coagulation is effected by touching each bleeding point with an electrodesiccating current. Because blood will dissipate the energy, a sponge should be used just prior to application. When vessels have been clamped by mosquito hemostats, coagulation will not be accomplished by touching the hemostat with the electrode; it must contact the clamped tissue directly. A recommended procedure is to infiltrate procedure. Minimum effective currents should be used to minimize coagulum.

### APPLICATIONS IN GYNECOLOGY

#### VAGINAL CYSTS

Excise an oval strip and evacuate, blanch the interior thoroughly with a strong desiccating current. Gartner cysts extending near the vault and along side the cervix respond to this method.

#### CONDYLOMATA OF THE VULVA

These warts may be thoroughly desiccated singly, the same as the various types of warts on the surface of the body. (See Venereal Warts)

## APPLICATIONS IN GYNECOLOGY (Con't)

### CERVICAL POLYPS

Cervical growths up to two centimeters may be thoroughly desiccated at the base without anesthetic. If shallow, they may be sprayed with a desiccating spark until blanched thoroughly. Polyps extending back into the cervical canal may require several treatments.

### PRURITIS VALVAE

Thorough desiccation playing the spark over the surface with a strong current brings about excellent results. In very aggravated forms, excess desiccated tissue may be excised.

### URETHRAL TUMORS (Benign)

Benign vascular tumors in urethral orifices are readily destroyed by desiccation. Treatment should be thorough.

### URETHRAL CARBUNCLE

Readily desiccated using a fine needle point buried in the tissue if the growth is not more than 2 centimeters. Blanch the tumor thoroughly.

### CERVICAL EROSION

Mild coagulation of the vaginal aspect of the cervix has been performed with outstanding success by many physicians. The coagulation of a thin film of tissue, as well as the localized cysts and erosions, is obtained with no local anesthesia needed.

### CERVICITIS

A strong desiccating current is employed, thoroughly desiccating the entire infected mucosa about the canal. One or more treatments are recommended according to the patient's tolerance and extent of the disease. Biactive coagulation is used for more extensive areas.

### BARTHOLIN'S GLANDS

An abscess or cyst is treated first by incision, entirely evacuating the contents. The needle point may then be placed in the cyst, and the entire lining of the sac destroyed by thoroughly spraying with the high frequency desiccating spark.